

CD1140 Contactless Torque Sensor



- **Contactless transmission**
- **Keyed Shaft couplings**
- **± 0.05 to $\pm 20,000$ Nm (± 0.04 to $\pm 16,000$ Lbf-ft)**
- **Stainless Steel or Aluminum**
- **Built In Amplifier**

DESCRIPTION

The CD 1140 family of torque sensors offers a rugged but small package size as well as many mounting configurations so as to provide excellent measurements in both industrial and laboratory environments. The contactless transmission of supply voltage and measuring signal facilitates continuous operation with low wear and no slip ring service. The CD1140 is also available with optional speed or angle detection (but not both).

With many years of experience as a designer and manufacturer of sensors, Measurement Specialties often works with customers to design or customize sensors for specific uses and testing environments.

To meet your needs we also offer complete turnkey systems. The matched components (sensor, power, amplifier and digital display) are formatted, calibrated and ready for immediate use.

FEATURES

- • Ranges from 0.05 to 20,000 Nm (0.04 to 16,000 Lbf-ft)
- • High Accuracy
- • Single Supply Voltage
- • Built-in Amplifier
- • Low Moment of Inertia
- • Small Outline
- • Speed and Angle Detection (Option)

APPLICATIONS

- Dynamic applications
- Process control equipment
- Test and Measurement
- Robotics and effectors
- Laboratory and Research
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STANDARD RANGES

Model	CD1140-1	CD1140-1a	CD1140-1b	CD1140-2	CD1140-3	CD1140-6	CD1140-7	CD1140-8
F.S. in Nm	0.05 - 0.1 0.2 - 0.5	1 - 2	5 - 10	20 - 50	100 - 150 200 - 300	500 - 1K 1.5K	2K - 3K 4K - 5K	10K - 15K 20K
F.S. in Lbf-ft	0.04 - 0.08 0.16 - 0.4	0.8 - 1.6	4 - 8-	16 - 40	80 - 120 160 - 240	400 - 800 1.2K	1.6K - 2.4K 3.2K - 4K	8K - 12K - 16K
RPM max.	37000	37000	26000	19000	13500	7900	6300	4000

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PERFORMANCE SPECIFICATIONS

Ambient Temperature: 20±1°C (unless otherwise specified)

PARAMETERS

Operating Temperature Range (OTR)	0 to 60°C (32 to 140°F)
Compensated Temperature Range (CTR)	5 to 45°C (41 to 113°F)
Zero Shift in CTR	0.02% F.S. /°C (0.01% of F.S. /°F)
Sensitivity Shift in CTR	0.01%/°C of reading (0.005% /°F of reading)
Range (F.S.)	±0.05 Nm to ±20 kNm [±0.04 lbf-ft to ±16 klb-ft]

Over-Range

Without Damage	2 x F.S.
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Accuracy

Linearity	0.1%F.S.
Hysteresis	0.1%F.S.

Electrical Characteristics

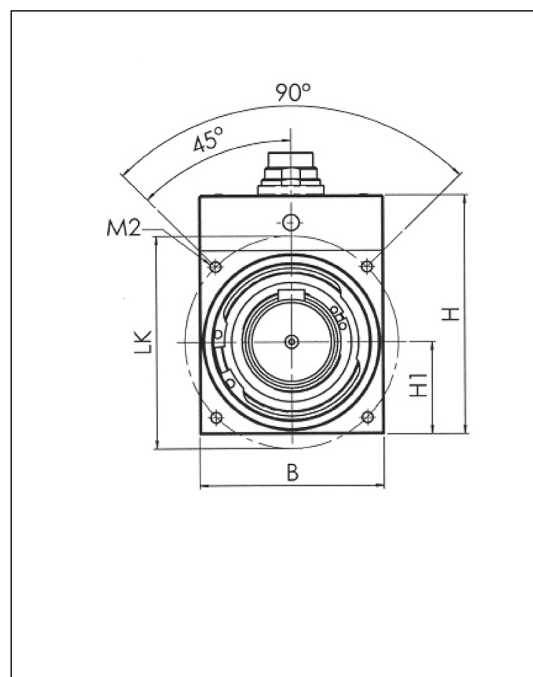
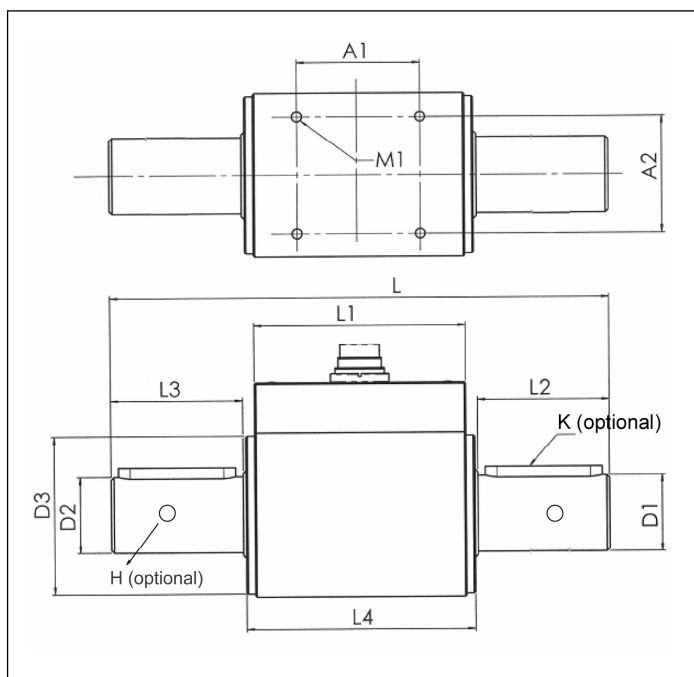
Model	CD1140
Supply Voltage	12Vdc±10%
Sensitivity	-10 to 10Vdc (from -F.S. to F.S.)
Consumption	<200mA

Notes

1. Electrical Termination: 6 pin connector (12 pin connector with optional speed or angle detection)

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DIMENSIONS & WIRING SCHEMATIC (IN METRIC AND IMPERIAL)



Mechanical Dimensions in mm [inch]

⁽¹⁾ 2000; 3000; 4000; 5000 Nm ⁽²⁾ 10000; 15000; 20000 Nm

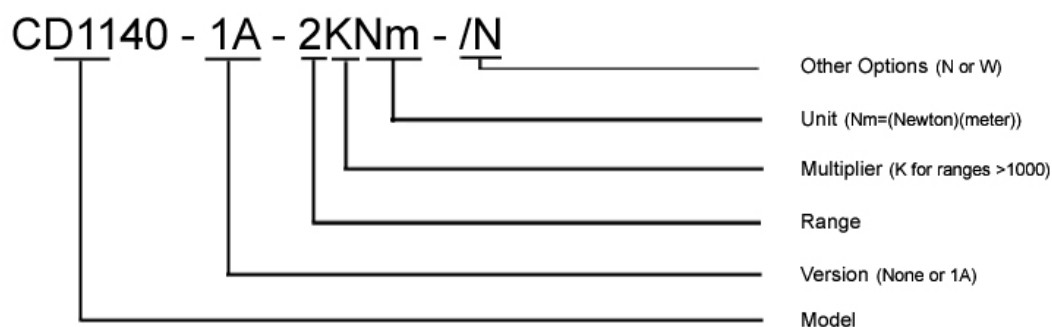
Model	CD1140-1	CD1140-1a	CD1140-1b	CD1140-2	CD1140-3	CD1140-6	CD1140-7	CD1140-8
F.S. in N.m [Lbf-ft]	0.05 - 0.1 - 0.2 - 0.5 [0.04 - 0.08 - 0.16 - 0.4]	1 - 2 [0.8 - 1.6]	5 - 10 [4 - 8]	20 - 50 [16 - 40]	100 - 150 - 200 - 300 [80 - 120 - 160 - 240]	500 - 1000 - 1500 [400 - 800 - 1200]	[1600 - 2400 3200 - 4000] ⁽¹⁾	[8000 - 12000 16000] ⁽²⁾
L	89 [3.5]	95 [3.74]	110 [4.33]	145 [5.71]	170 [6.69]	270 [10.63]	320 [12.6]	355 [13.98]
B	28 [1.1]	28 [1.1]	36 [1.42]	42 [1.65]	56 [2.2]	88 [3.46]	105 [4.13]	160 [6.3]
H	48.5 [1.91]	48.5 [1.91]	54 [2.13]	58 [2.28]	73 [2.87]	104 [4.09]	121 [4.76]	176 [6.93]
H1	14 [0.55]	14 [0.55]	18 [0.71]	21 [0.83]	28 [1.1]	44 [1.73]	52.5 [2.07]	80 [3.15]
Ø D1	8 [0.31]	8 [0.31]	10 [0.39]	15 [0.59]	26 [1.02]	45 [1.77]	70 [2.76]	110 [4.33]
Ø D2	5 [0.2]	6 [0.24]	10 [0.39]	15 [0.59]	26 [1.02]	45 [1.77]	70 [2.76]	110 [4.33]
Ø D3	27 [1.06]	27 [1.06]	32 [1.26]	38 [1.5]	54 [2.13]	80 [3.15]	-	-
H (optional)	Ø2 H7	Ø2.5 H7	-	-	-	-	-	-
Ø LK	32 [1.26]	32 [1.26]	38 [1.5]	46 [1.81]	65 [2.56]	98 [3.86]	-	-
L1	62 [2.44]	62 [2.44]	68 [2.68]	79 [3.11]	72 [2.83]	84 [3.31]	95 [3.74]	115 [4.53]
L2	10 [0.39]	14 [0.55]	18 [0.71]	30 [1.18]	45 [1.77]	85 [3.35]	110 [4.33]	115 [4.53]
L3	11 [0.43]	14 [0.55]	18 [0.71]	30 [1.18]	45 [1.77]	85 [3.35]	110 [4.33]	115 [4.53]
L4	66 [2.6]	66 [2.6]	72 [2.83]	83 [3.27]	78 [3.07]	90 [3.54]	-	-
A1	40 [1.57]	40 [1.57]	56 [2.2]	60 [2.36]	42 [1.65]	46 [1.81]	75 [2.95]	85 [3.35]
A2	22 [0.87]	22 [0.87]	24 [0.94]	32 [1.26]	40 [1.57]	70 [2.76]	85 [3.35]	130 [5.12]
M1	M3x5	M3x5	M3x6	M3x6	M4x8	M6x12	M8x16	M10x20
M2	M3x6	M3x6	M3x6	M3x6	M4x8	M6x12	-	-
K (optional)	-	-	2xA3x3x14	2xA5x5x25	2xA8x7x40	4xA14x9x80	-	-
Weight [g]	170	170	340	600	1,300	4,500	11,500	31,000
RPM max.	37,000	37,000	26,000	19,000	13,500	7,900	6,300	4,000

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OPTIONS

H : Cross Holes on Shaft Ends (see table on page 3/4)
K : Torquemeter with Keyed Shafts (see table on page 3/4)
N : Speed Detection (Notes : Rev. Max : 10,000rpm ; Pulses/Rev. : 60)
W : Angle Detection (Notes : Rev. Max : 3000rpm ; Pulses/Rev. : 360 ; Resolution : 1° ; Phase shift : 90°)

ORDERING INFO



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